

**CALFED Bay-Delta Program Project Information Form  
Watershed Program – Full Proposal Cover Sheet**

1. Full Proposal Title: Lassen National Forest Watershed Stewardship Within the Anadromous Antelope Creek Watershed

Concept Proposal Title/Number: Lassen National Forest Watershed Stewardship Within the Anadromous Antelope Creek Watershed

Applicant: USDA, Forest Service, Lassen National Forest

Applicant Name: Edward C. Cole, Forest Supervisor

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Fiscal Agent Name: Elaine Courtright

Fiscal Agent Mailing Address: Elaine Courtright, Lassen National Forest, 2550 South Riverside Drive, Susanville, CA 96130.

Fiscal Agent Telephone: (530) 257-2151, Fiscal Agent Fax: (530) 252-6428, Fiscal Agent Email: [ecourtright@fs.fed.us](mailto:ecourtright@fs.fed.us)

2. Type of Project: Indicate the primary topic for which you are applying (check only one)

- |  |                                     |
|--|-------------------------------------|
| <input type="checkbox"/> Assessment                | <input type="checkbox"/> Monitoring |
| <input type="checkbox"/> Capacity Building         | <input type="checkbox"/> Outreach   |
| <input type="checkbox"/> Education                 | <input type="checkbox"/> Planning   |
| <input checked="" type="checkbox"/> Implementation | <input type="checkbox"/> Research   |

3. Type of Applicant:

- |  |   |
|--|---|
| <input type="checkbox"/> Academic Institution      | <input type="checkbox"/> Non-Profit                 |
| <input checked="" type="checkbox"/> Federal Agency | <input type="checkbox"/> Private Party              |
| <input type="checkbox"/> Joint Venture             | <input type="checkbox"/> State Agency               |
| <input type="checkbox"/> Local Government          | <input type="checkbox"/> Tribe or Tribal Government |

4. Location (Including County) Butte Basin Ecological Management Zone, Antelope Creek Watershed, Tehama County.

What major watershed is the project primarily located in:

- ☐ Klamath River
- ☒ Sacramento River
- ☐ San Joaquin River
- ☐ Bay-Delta
- ☐ Southern CA
- ☐ Tulare Basin

5. Amount of Funding Requested: \$ 673,200

Cost share/in-kind partners? ☒ Yes ☐ No

Identify Partners and amount contributed by each:

USFS, Lassen National Forest

6. Have you received funding from CALFED before?   X   Yes        No

If yes identify project title and source of funds

(1997) Watershed Improvement: Stabilization of potential sediment sources within the Deer, Mill, and Antelope Creek watersheds on Lassen National Forest lands. Administered by the Bureau of Reclamation

(2001) Lassen National Forest Watershed Stewardship Within the Anadromous Watersheds of Butte, Deer, and Mill Creeks. Administered by The National Fish and Wildlife Foundation.

By signing below the applicant declares the following:

1. The truthfulness of all representations in their proposal
2. The individual signing this form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization)
3. The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the Watershed Program Proposal Solicitation Package and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent provided in the Proposal Solicitation Package.

EDWARD C. COLE

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Printed name of applicant

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Signature of applicant

## 1. Project Description, Assumptions, Expected Outcomes, Timetable, and General Methodology

**a. Abstract:** The Lassen National Forest Phase II proposal builds on Forest's goal to bring about a significant improvement to watershed condition and resiliency in the upper watersheds and provide additional protection to downstream beneficial uses. Of particular emphasis is to make the upper watersheds more resilient to wildfire and extreme precipitation events. This proposal includes sub-watershed-based tasks (Task 1) within the Antelope Creek anadromous watershed in Tehama County, and an expanded technology transfer/education program (Task 2) within the Antelope, Battle, Butte, Deer, and Mill Creek watersheds within Butte, Shasta, and Tehama Counties. Task 1 includes 34 restoration projects that were prioritized from a list of over 80 problem sites identified as part of our Phase I 1997 Calfed grant. The restoration activities focus on the stabilization, restoration, and maintenance of ecological processes, and are designed to allow for adaptive management. We hope to complete an additional 33 restoration projects in four additional subwatersheds with internal cost share contributions. Task 2 is designed to expand our technology transfer/education outreach to our partners and fellow watershed stakeholders. This task builds on an existing database and restoration treatments to transfer knowledge at the "local" and regional levels. The technology transfer will address site identification methods, developing restoration opportunities, assessing long-term benefits and costs, designs, implementation monitoring, effectiveness monitoring, and before and after photographs. We also hope to share our increased data and knowledge made possible with the help of our 1997 and 2001 Calfed grants, by conducting field trips and workshops, and preparing CD-rom and video guides. Our goal is to assist those partners who are already implementing restoration work, and to encourage those who have yet to become partners. It is our hope that both tasks will strengthen our current partnerships and initiate new ones. As these partnerships grow, and more stakeholders see and understand the long-term benefits of improving ecosystem and water quality, so to will the number of successfully implemented coordinated restoration efforts.

We have worked with the Deer, Mill, Battle, and Butte Creek Watershed Conservancies, landowners, and other stakeholders to identify and prioritize restoration sites. Restoring or rehabilitating these sites would help achieve the goals and strategic objectives of CALFED, the Watershed Conservancies Management Plans, and the Forest's Land and Resource Management Plan (as amended by PACFISH). These plans recognize humans are integral components of, as well as the greatest modifiers of the ecosystem, and those human interests must be incorporated into restoration decisions. Our proposal focuses on treating sites of accelerated erosion and improving public understanding of watershed-fisheries linkages. The proposed restoration activities will help to achieve CALFED's mission by focusing on the stabilization, and restoration of riparian habitat, wetlands, and natural stream morphology, and maintenance of ecological processes, and linking these projects to public education and the ongoing restoration efforts of other landowners. Each restoration activity emphasizes long-term protection and enhancement rather than short-term improvement. Adaptive management designs allows for future activities to build on these initial actions.

The proposal has widespread public support and represents the collaborative effort of many stakeholders in the watersheds. Through workshops and field meetings, criteria to establish priorities for this work were developed. Five primary criteria were used to prioritize sites: 1. Diversion potential, 2. Subwatersheds with the highest biologically or physical sensitivity, 3. Potential to produce the most sediment, 4. Subwatersheds with other ongoing or planned restoration activities, and 5. Greatest chance of being successfully implemented within the planned time frames. For road projects (other than decommissioning), only sites on arterial roads not under consideration for closure were considered. The Forest Service has taken steps to assure the scientific credibility of the actions taken in this proposal by asking individuals from research and academia to participate in the review of the "Road Management Guide", our comprehensive Roads Analysis Process, the site selection criteria, and monitoring activities. Further review is provided by members of Conservancies and several task groups (i.e. restoration, monitoring) active in the watersheds on the Lassen National Forest that support anadromous fisheries.

### b. Project Description

**Task 1: Antelope Creek Ecological Unit Watershed Stewardship:** The Antelope Creek Ecological Unit is located within the Butte Basin Ecological Management Zone. Restoration sites were selected based on the five previously listed priority criteria plus local physical and biological criteria applied at the subwatershed scale. These additional criteria included the percentage of the subwatershed under Forest Service jurisdiction, the number of identified restoration sites, the proximity to anadromous habitat, and the long-term transportation management recommendations identified in an interdisciplinary roads analysis process. Of the seventeen subwatersheds studied in the Watershed Analysis, three high priority subwatersheds were identified. In these three subwatersheds, improvement of aquatic habitat, restoration of wetlands and riparian areas, and restoration of natural stream morphology are the deliverables.

Task 1 implements **extensive** erosion/sediment control projects designed to reduce source sediment production and produce more natural patterns of runoff. The actions promote and maintain important ecological processes and functions. The natural ecological processes of runoff, sediment transport, and woody debris recruitment contribute to conditions that are favorable to salmon, steelhead and their habitat. Activities will protect and may improve aquatic habitats by reducing sediment production through a variety of treatments. The subtasks will also restore wetlands and riparian areas through decommissioning of roads, and restore natural stream morphology and improve non-anadromous fish passage by upgrading culverts or replacing them with fords. These subtasks link directly to CALFED grant #1425-98-AA-20-16210 that funded the identification of project sites, the design of improvements, and the environmental analysis of proposed activities.

**Task 2: Expansion of our Technology Transfer/Education Outreach:** This task allows us to package our watershed restoration program monitoring results including data collection, site identification methods, development of restoration opportunities, assessing benefits and costs, designs, implementation and effectiveness monitoring, and before and after photographs. Sharing approved assessment and monitoring protocols, proven designs, and implementation and effectiveness monitoring results with interested partners, could result in an expansion of successfully implemented restoration projects both locally and regionally.

**c. Assumptions:** The hypothesis being tested is that implementation of watershed restoration projects to reduce erosion and improve conditions in the near-stream environment translates to improved habitat conditions for aquatic organisms including anadromous fish. The watersheds of Deer, Mill, and Antelope Creeks are among a very limited number of watersheds that contain a complete set of watershed processes (with a connection to the lower reaches) where this hypothesis can still be tested.

The primary stressors addressed by the projects and activities proposed for this solicitation are: 1. Excessive sediment delivery to aquatic habitats, and 2. Human management activities that eliminate or degrade riparian habitat. These stressors represent the scientific assumption that poorly located or designed roads, poor or inconsistent watershed and streamside management practices, and lack of public knowledge regarding watershed stewardship contribute to habitat degradation or destruction and the decline of sensitive species. We will be able to test this hypothesis by pursuing a suite of management actions designed to address specific problems. The management actions used to test the following hypotheses stem from careful and creative design and integrate both passive and active adaptive restoration approaches.

The high level of uncertainty surrounding the dynamics of streams and stream/watershed interactions make testing these hypotheses difficult, and necessitates a multi-scale monitoring strategy. See Table 4 for a summary of the data needed to test each hypothesis.

#### **Hypothesis for Task 1: Implementation of sediment control projects**

- Restoration activities result in improved watershed condition (at the subwatershed scale)
- Reduction in accelerated surface erosion and improvement in near channel condition will result in improved aquatic conditions at the subwatershed (site of activity) scale.
- Restoration activities result in improved aquatic conditions in anadromous fish habitat

#### **Hypothesis for Task 2: Expansion of Technology Transfer/Education Program**

- Public education and understanding of watershed restoration practices will increase support for continued restoration work.
- Technology transfer will provide other stakeholders in the watersheds with a watershed restoration template, enabling them to initiate restoration plans and implement effective treatments.

**d. Expected Outcomes:** Task 1 will systematically implement restoration treatments to known sediment sources and apply the best available science to validate present assumptions that improving watershed management practices can best contribute to CALFED's ecological restoration goals. The expected outcome of this task is improved watershed condition and resiliency in seven subwatersheds of Antelope Creek, and long-term improved in-channel conditions. Task 2 will share technology and education with other stakeholders leading to an expansion of restoration projects that span several different ownerships. Results will be presented in: Annual monitoring reports, a Final Completion report, and Publication of key results and findings in Region Five Forest Service Fish Habitat Relationships Program publication "Currents". In addition, we are planning to submit documentation and results of this project to the Forest Service Engineering Management Series. This periodical is published as a means of exchanging engineering-related ideas and information on activities, problems, and solutions that may be of value to Forest Service engineers. Also, this documentation will be offered to the Forest

Service San Dimas Technology and Development Center as a case study for its Water/Roads Interaction Technology Series. Pictures and descriptions of restoration work will be featured on the Forest Internet and intranet web sites, and in Watershed Conservancy publications.

We will also utilize our working group and the Conservancies to plan and present field trips to display and discuss effectiveness of treatment measures. Target audience will be our partners in the subject watersheds, and watershed managers in other areas. We will also encourage local Colleges and Universities (Feather River College, Butte College, CSU-Chico, and U.C. Cooperative Extension) to develop courses or field trips focused on collaborative restoration efforts in these watersheds. If these entities express interest, we will assist them in program development.

**e. Timetable for Completion:** The start and completion dates, deliverable, and budget, for each task is shown in Tables 1 and 2. All task activities are scheduled for completion over a three-year period beginning in 2003. Several activities could be incrementally funded if allowances could be made to extend the initial completion dates. Phase I CALFED funding allowed the Agency to complete field analysis and initiate planning and environmental documentation for the proposed Task II restoration treatments. This work should significantly reduce the time and cost necessary to complete the remaining planning, design, consultation, and environmental documentation. All environmental compliance documentation is scheduled for completion in the first year of the grant allowing for two full field seasons to implement the treatments. If necessary, actual implementation could be extended beyond two years without any additional NEPA being required.

**f. General Methodology or Process:** The proposed project is a combination of site specific measures applied at the sub-watershed scale. The approach is a combination then, of strategically selecting sub-watersheds for treatment, and then applying the appropriate measures at each to the site-specific problem areas. Criteria used to select the sub-watershed in which to work are described elsewhere in this document, but briefly, included the proximity to anadromous habitat, the amount of improvement that could be realized, the presence of other restoration activities, and the risk of diversion potential. At the site level, the approach is to develop designs that will survey catastrophic events, provide the greatest protection for the least cost, and have low need for maintenance. Previous CALFED funding assisted in development and completion of a Roads Analysis Process that provides support for road related restoration products. For road decommissioning, prescriptions are site specific. All prescriptions meet the intent of restoring the natural hydrologic function of the treated areas.

Our process has three primary steps or levels of analysis: (1) Recognition of problems at a regional scale (PACFISH), (2) Scientific analysis of the resource conditions at a watershed scale (Watershed Analysis), and (3) Developing a restoration strategy and applying restoration concepts at site-specific locations. The strategy and site-specific planning process is designed to involve our partners, stakeholders and interested publics in the identification of problems, and the development of opportunities and management practices. Our “new” design and location standards for roads were developed by a technical committee that included participants from this diverse group. We incorporated the most current regulation, agency direction, research and techniques specific to restoration of watersheds. This effort produced a “Road Management Guide” which is our reference that will direct future research and provides an array of options and solutions to road related problems.

Construction procedures, equipment, and specifications are controlled by United States Department of Agriculture, Forest Service Specifications for Construction of Roads & Bridges. When designated in a Forest Service contract these specifications are binding on the parties signing the contract and become a part of the contract. Quality assurance is provided through the Forest Service contract inspection certification process under the supervision of Professional Civil Engineers, and other resource professionals as appropriate. Forest Service personnel may implement some restoration actions. The Lassen National Forest also has a road crew and Foremen that are very experienced in watershed restoration work, including road decommissioning.

Testing the hypothesis for the effectiveness of sediment control projects can be assured through the Forest Service contracting requirements and the depth and breadth of experience currently on the Forest. Sampling of current erosion rates associated with roads can be assessed using tools and protocol developed by San Dimas, Roads Water Interaction series. Erosion rates pre and post treatment will be calculated at the site scale. The Forest has developed a Programmatic Non-Routine Biological Assessment for this restoration work as a requirement of the Endangered Species Act. Each individual site treatment is consulted on with the National Marine Fisheries Service.

## 2. Qualifications and Implementation Readiness:

**a. Institutional Structure:** The Lassen National Forest has a staff of well-qualified and experienced resource professionals. The key staff that would provide oversight for project planning and implementation would include fishery biologists, hydrologists and engineers with support from archaeologists, wildlife biologists, botanists, foresters, contracting specialists and fiscal administrators. This same team has been involved for the past 3½ years planning, implementing, and monitoring restoration work, which was made possible in part by a 1997, CALFED grant. Members of the group have extensive experience in watershed restoration and first hand knowledge of the subject watersheds. Elaine Courtright is the Forest's fiscal agent and Janice Bishop is the Province Agreements Coordinator. Elaine and Janice have prior experience in establishing agreements and the accounting procedures associated with CALFED grants administered by both the Bureau of Reclamation or the National Fish and Wildlife Foundation.

**b. Technical Support:** In addition to the existing staff, support by other qualified resource professionals and research scientists is available from the Pacific Southwest Forest Service Regional Office, other National Forests, the Pacific Southwest Research Station, the San Dimas Technology and Development Center, and private consulting firms to assist in project planning, data collection and analysis, design, implementation, and adaptive management. The 1997 CALFED has allowed the forest to initiate the data collection, analysis, and NEPA process for the Antelope Creek restoration projects. Additionally, the Forest, in 1996, established long-term in-channel monitoring of Antelope Creek (three reaches) and its tributaries (three reaches). All this work will streamline the required project level NEPA documentation and ensure implementation within three years.

**c. Previous Projects:** This project represents Phase II of our 1997 Phase I CALFED grant that identified, analyzed and prioritized over 80 restoration sites within the Antelope Creek watershed. The Phase I grant also included the implementation and monitoring of demonstration restoration projects. The proposed restoration work is similar in nature to the completed demonstration work, and the recently CALFED funded Phase II implementation projects within the Deer, and Mill Creek watersheds. We are also implementing road and stream restoration planning and implementation work in partnership with Collins Pine Company, Sierra Pacific Industries, and the Deer Creek Watershed Conservancy.

The Lassen National Forest has heightened its role in the coordination of watershed management planning and implementation efforts with the Battle, Butte, Deer, and Mill Creek Watershed Conservancies, Sierra Pacific Industries, Collins Pine Company, State and local agencies, and other stakeholders by committing several resource professionals to the task. We view all the collaborators and supporters as ongoing participants in the areas of project planning and implementation, especially where there are mutual interests and needs (e.g. multiple ownership watersheds and cost-share roads). The extent of the collaborators' involvement is growing and is expected to become significantly greater as the Conservancy's efforts continue, the results of the initial restoration projects are shown to be effective, and educational programs reach more watershed users.

### Lassen National Forest Key Grant Support Positions and Qualifications

Elaine Courtright	Forest Chief Financial Officer Associate of Arts and three years college course work. Eleven years of accounting and business administrative experience in private sector. Twenty two years of accounting and business administrative experience in Forest Service which includes eight years as Forest Budget & Accounting Officer. Elaine will administer all the financial accounting and billing procedures for the grant.
Ken Roby	District Fisheries Officer. B.S. Conservation of Natural Resources, M.S. Aquatic Ecology. Two years as Fisheries Biologist, East Bay Regional Parks. Twenty two years with Forest Service including Fisheries, Hydrology and Resource Officer positions (Six Rivers, Plumas Lassen, and PSW-Albany). Experience in program planning, watershed restoration and monitoring. Ken will prepare biological assessments, develop monitoring plans, and supervise the collection and analysis of fisheries monitoring data. He will be a key member of the forests adaptive management team.
Howard Brown	Forest Fisheries Biologist. B.S. Fisheries Management. Four years as Fisheries biologist after numerous years as a seasonal Fisheries Biologist on the Lassen and Six Rivers National Forests. Experience in stream and fisheries monitoring, inventory and assessment of fisheries habitat condition. Skilled in data analysis and evaluation and computer applications. Howard will review biological assessments, help develop and conduct monitoring plans, and prepare biological assessment tiering forms.

- Carolyn Napper Forest Soil Scientist. B.S. Marketing, M.S. Soil Science. Two years as a Private Agricultural Consultant, 8 years as District Watershed and Range Staff Officer on the Stanislaus and Lassen N.F., and four years as a forest Soil Scientist on the Stanislaus and Lassen N.F. Experience in planning, design, and implementation of watershed restoration practices for road decommissioning, road relocation, landing restoration, campground improvements, meadow restoration, and channel stabilization. Carolyn is responsible for the preparation of all supporting documents including cumulative watershed effects analysis, and monitoring plans and will also supervise the collection and analysis of all soil and water monitoring information. She will also be part of the adaptive management team.
- Greg Napper Transportation Planner/Engineer. B.S. Civil Engineering. 23 years with the Forest Service with experience in all aspects of Road Engineering including, reconnaissance, design, operations and maintenance. Road Manager for 15 years (Stanislaus), with experience in planning and implementation of a variety of road projects. Have acted as District CALFED Project Engineer for the past two years. Greg is responsible for engineering field evaluations and will supervise the implementation of road-related restoration work. He will also be responsible for monitoring the performance of restoration work and initiating our adaptive management strategy.
- Susan Chappell Forest Fisheries Biologist B.S. Natural Resources Management. Two years as Wildlife Biologist, California Department of Fish and Game. Two years as Wildlife Biologist, Forest Service (Plumas). Ten years as Fisheries Biologist, Forest Service (Lassen). Experience in recommending stream crossing designs; road and landing decommissioning to benefit aquatic resources; program planning and implementation. Susan will review biological assessments, help develop monitoring plans, and prepare biological assessment tiering forms.
- Diane Watts District Archaeologist. B.A. Anthropology, M.A. Anthropology. Twenty four years as an Archeologist. Diane will supervise the completion of all heritage resource site evaluations that are required prior to the initiation of any ground disturbing restoration work. She will recommend mitigation measures, and provide all required documentation for EA's and the State Historical Preservation Office.
- Mark Williams District Wildlife Biologist. B.S. Wildlife Management. Eight years experience as wildlife biologist, three years experience in botany. Other experience in fire management, silviculture, and timber sale administration. Mark is responsible for completing all the required reports, Biological Evaluations and consultations with Federal and State agencies prior to on-the-ground restoration activities.
- Russ Volke District Silviculturist. B.S. Forest Watershed Management. 19 years experience in Forest Management with the Forest Service. Certified Silviculturist since 1985. Experience in writing riparian restoration vegetation management prescriptions. Three years as District Watershed Restoration Coordinator. Russ is responsible for assembling all the required environmental documentation needed to implement restoration work. He is also responsible for building and maintaining collaborative partnerships with the Watershed conservancies, private landowners, and the general public.
- Melanie McFarland Forest Fisheries Biologist. B.S. Fisheries. Five years of seasonal fisheries experience working for private organizations, consultants and the California Department of Fish and Game. Three years as Fisheries Biologist with the U.S. Fish and Wildlife Service. Ten years as Forest Fisheries Biologist (Lassen). Experience in program planning and implementation. Melanie will be responsible for consultations with National Marine Fisheries Service and reviewing environmental assessments and biological Assessments.
- Miley Sutherland Forest Contracting Specialist. B.S. Forestry, M.S. Business Administration. Contracting Officer for eleven years with the Forest Service, and six years with the USDA Animal and Plant Health Inspection Service. Miley will supervise the preparation of all service contract restoration packages and serve as the Forest's Contracting Officer for each project.

### 3. Budget Information:

The requested CALFED funding to complete all Tasks 1 and 2 is \$673,200. The emphasis of this funding request is on implementation of erosion control and habitat restoration work designed to benefit priority species (principally, spring and fall-run Chinook salmon, and steelhead trout). The two tasks are severable to respond to lesser funding amounts. Task 2 is designed to share database information, technology, and watershed restoration methodology with fellow stakeholders who would like to follow a successful planning and implementation template before proceeding themselves.

**a. Cost Basis:** Under Task 1, all site-specific restoration treatments were developed after specialists reviewed road inventory data and visited the sites. Forest Engineers, after reviewing the actual costs of similar restoration work that has been performed over the last three years in the Deer, Battle, and Mill Creek watersheds, developed the cost estimates for each Antelope Creek site. The total Grant request cost estimate of \$673,200 includes planning, implementation, administration, and reporting costs. Planning and administration costs, representing 15% of the proposal, include public scoping and meetings, NEPA document preparation, consultation with National Marine Fisheries, and coordination of all implementation and monitoring activities. Planning can occupy a considerable amount of time and represent 50 percent of project costs in many cases, but much of the preliminary or “left-side” planning for the Antelope Creek watershed sites, including heritage resource evaluations, botanical inventories, engineering evaluations, a roads inventory, and a roads analysis have already been completed with funding from our 1997 Calfed grant. Related implementation costs, representing 10 percent of the proposal, include engineering design, contract preparation, contract administration, and implementation monitoring. A 20 percent overhead charge is assessed only to the work completed by Forest Service employees.

Under Task 2, the \$56,000 cost estimate is based on the number of direct labor hours it will take specialists to compile site restoration information (designs, project implementation costs, before and after photos, and implementation and effectiveness monitoring data), print the information, plan and conduct workshops and field trips, and distribute technology, and procure the services of professionals to assemble the watershed restoration CD-rom and video guide. It also includes a 20% overhead assessment.

**b. Travel and Supplies:** Travel costs associated with Task 1 include the commute to and from project work sites by Forest Service construction crews, Contractors, and Contract Administrators and Resource Specialists. These costs, for Forest Service employees are included under salaries and are expected to represent no more than 10% of the total costs. Contractor travel costs are included in the estimate for each proposed restoration treatment site. Listed supply and equipment costs for Task 1 include all items required by Forest Service crews to complete site-specific restoration treatments. They include: culverts, culvert metal-end sections, rock rip-rap, and concrete, and equipment rentals, such as excavators. Supplies and Equipment required to complete contracted work are included in the service contract cost estimates. Travel costs associated with Task 2 include all necessary commuting associated with conducting field trips and workshops,. These costs, expected to be less than 20% of the total costs are included under the budget heading of Workshops, Field Trips, and Administration. Supplies for Task 2 include all the materials required to assemble educational packages for workshops, field trips, and technology transfers including paper, mylar, videos, photographs, and CD-roms.

**c. Service Contract Rationale:** We estimate that contractors will implement approximately 50 percent of the restoration treatments. There are three principle reasons for using contracting to implement much of the restoration work: (1) Contractors possess greater experience and the necessary equipment to accomplish some of the larger resotration projects, especially those that require paving and concrete work; (2) Contractors provide greater efficiency than force account crews for certain types of restoration work, especially when travel distances are great, and; (3) the Forest is not equiped to implement the 60+ restoration treatments within the three year time frame without assistance from outside contractors.



Table 1: Yearly Budgets by Task (CALFED Funds Only)

Task	Year 2003 Budget	Year 2004 Budget	Year 2005 Budget	Total
1. Antelope Creek Restoration Treatment Implementation	\$0	\$169,000	\$315,000	\$484,000
1. Planning Environmental Compliance, Administration	\$35,080	\$22,420	\$22,420	\$79,920
1. Engineering Design, Contract Preparation and Administration	\$26,640	\$10,640	\$16,000	\$53,280
2. Data Compiling and Technology Transfer	\$4,320	\$7,920	\$8,840	\$43,040
2. Workshops, Field Trips and Administration	\$2,880	\$2,880	\$7,200	\$12,960
<b>Total</b>	<b>\$68,920</b>	<b>\$212,860</b>	<b>\$391,420</b>	<b>\$673,200</b>

**d. Cost Share Contribution:** Tentatively approved cost share contributions for this project are \$150,000.

Contributions are tentative as the Agency has a reasonable estimate on appropriated funding for activities that support watershed restoration activities, but no estimate of funding allocations above current expectations. The Forest is seeking additional funding support for this proposal for fiscal years 2003-2005 from a variety of internal supplemental funding sources including the 10% grant program, the Challenge Cost Share Program, the Fisheries and Hydrology Investment Fund, the Road Maintenance Fund, Clean Water Action Plan funds, and Fish Passage funds. If our past success in acquiring additional funding can be used as a measure to predict future success, cost share contributions are expected to exceed \$150,000.

**e. Cost Relative to Anticipated Benefits:** The anticipated benefits of the proposal are to: (1) Reduce sediment production from 60+ identified sites, (2) Improve in-channel conditions, and 3) Improve overall watershed conditions for aquatic organisms including anadromous fish. Treatments such as ours that are designed to arrest erosion at its source, have shown to be effective in reducing sediment delivery. Other options that do not directly treat the source of the sediment, such as the construction of downstream sediment traps do not eliminate sediment sources and cannot be expected to provide long-term benefits. Each site-specific restoration treatment incorporates several key design elements, all of which contribute to long-term resource benefits and economic efficiency. To provide for expected resource benefits, such as the reduction of erosion and near stream disturbance, designs meet calculated 100-year flow events. These treatments are not “quick fixes” but are designed to accept a large range of natural flows. By reducing the risk of site failure we improve the rate of in-channel recovery, and improvement of watershed condition and resiliency. Quantitative benefits to anadromous fish cannot be made within the project timeframes, but the cumulative results of the treatments are expected to significantly reduce the sources of sediment and contribute to the long-term improvement and maintenance of anadromous habitat. The treatments also provide long-term economic benefits as they are designed to meet 100-year flow events and to require little maintenance. Costs to repair inadequately designed roads damaged by less than 100-year storm events in Region Five have been in the millions over the past 10 years.

#### 4. Technical Feasibility:

The activities of this proposal address the most pressing issues of the upper Antelope Creek watershed; that of reducing sediment stressors, and restoring near stream conditions and processes. Task 1, the Extensive Erosion/Sediment Control Projects Within the Antelope Creek watershed, link directly to our 1997 CALFED grant #1425-98-AA-20-16210 that funded the identification of project sites, design of improvements, and environmental analysis of proposed activities. The selection of these Phase II projects is a result of a completed watershed assessment restoration strategy, a roads inventory, a road management guide, a roads analysis process, and site-specific engineering evaluations. The selection also represents a coordinated effort among the LNF, Watershed Conservancies, and other stakeholders to identify the highest priority restoration activities consistent with CALFED's objectives. The proposed restoration treatments have proven to be effective elsewhere in reducing the delivery of fine sediments to streams and/or reducing the risk of road-related stream crossing failures. Building and sharing restoration databases, public awareness and education are additional benefits. Because a large portion of the analysis necessary to support NEPA documentation has been completed, and the proposed restoration projects have the support of the public, Conservancies, and other stakeholders, full implementation is expected to be complete by the end of 2005.

The completion dates do allow for the following exigencies: consultation procedures with the National Marine Fisheries Service, the Forest Service's impending revisions to its transportation management policy, and the Agency's need to expand public involvement, especially in the area of road management decisions. We have completed a Programmatic Biological Assessment for Non-Routine road maintenance which has streamlined our consultation process with NMFS, have incorporated the impending road policy revisions into our current analysis for Antelope Creek, and have developed a new strategy to better involve the public in our roads management process.

**a. Similarity to Previously Implemented Projects:** A portion of this solicitation, namely the extensive sediment reduction/stabilization activities, proposed within Antelope Creek watershed, represents Phase II of the Forest's 1997 grant. Phase I of the 1997 grant included the identification of the problem, conceptualizing the problem, developing hypothesis, and testing the hypothesis through research and implementation and monitoring of demonstration projects. In addition, the Forest just received Phase II funding to implement extensive restoration treatments within the Deer and Mill Creek watersheds over the next three years. Valuable experience in the implementation and monitoring of these sites will undoubtedly improve our efficiency and success in substantially reducing surface erosion and near-stream disturbances in the Antelope Creek watershed. Additionally, our monitoring program of the Phase I demonstration projects, completed in March 2001, took the LNF through three important decision nodes in adaptive management process, setting the stage for the initiation of on-the-ground restoration actions in Phase II. The Phase I experience has also enabled us to streamline our environmental analysis and consultation process. We have developed an extensive outreach program and involved our local publics, fellow stakeholders, other Federal, State, and local government agencies, and Watershed Conservancies in the planning and implementation of restoration work. We have encouraged public participation with our outreach efforts, and with participation has come understanding and support for our restoration program. Public support is the key to accomplishing all the environmental documentation and expeditiously implementing work on the ground.

We have completed much of the planning work required to implement work on over 80 sites identified for restoration work within the Antelope Creek watershed and are currently working with the National Marine Fisheries Service to streamline our consultation process. By bundling restoration projects within high priority watersheds, the assessment of effects and findings can possibly be made on a subset of projects rather than individual sites.

**b. New Approaches or Techniques:** Restoration designs and implementation practices for this project will be patterned after similar previously successful projects. Designs and implementation procedures will, however, allow for adaptive management opportunities. These opportunities will surface as a result of ongoing site monitoring and advances in technology.

Implementation monitoring will be used to fill in gaps associated with treatment designs and construction technology available to efficiently implement the designs on-the-ground. Effectiveness monitoring tracks the long-term success of a particular treatment in meeting the site-specific management objectives such as reduction of chronic erosion, recovery of riparian habitat, or savings in maintenance. We are planning to submit documentation and results of this project to The Engineering Management Series. This periodical is published as a means of exchanging engineering-related ideas and information on activities, problems, and solutions that may be of value to engineers service wide. Also, this documentation will be offered to San Dimas Technology and Development Center as a case study for the Water/Roads Interaction Technology Series. Pictures and descriptions of restoration work will be featured on the Forest Internet and intranet web sites, and in Watershed Conservancy publications. We will also utilize our working group and the Conservancies to plan and present field trips to display and discuss effectiveness of treatment measures. Target audience will be our partners in the subject watersheds, and watershed managers in other areas.

**c. Maintenance of the Project:** The Forest Service will assume the long-term maintenance and monitoring of the treatment sites. Because the treatments are designed to meet 100-year flow events and require little maintenance, we believe that our long-term maintenance costs will be lower than the current costs.

## **5. Monitoring and Adaptive Management:**

A key assumption of the approach (monitoring and restoration) is that bringing key ecosystem elements (surface erosion, hillside hydrology, near channel condition) closer to their natural condition will result in improved system health and condition. There are many alternative monitoring approaches. Alternatives we considered included modeling sediment production and emphasizing measurements at fewer spatial scales. Primary components of the proposed monitoring strategy are ongoing. In conjunction with the restoration treatments of this phase, implementation and on-site effectiveness

monitoring would be completed (though effectiveness following large storm events would take longer). Watershed and aquatic condition monitoring are long-term commitments of the Forest, and would continue past this phase of the project.

Stakeholders, agencies and the Conservancies active in these watersheds will provide review of results. Those involved possess considerable expertise in fisheries, watershed, and water quality. Data will be presented annually. Implementation data will be used in the short term to revise ongoing or planned activities as necessary. Existing monitoring efforts provide a baseline for future monitoring activities. Results will be compared to objectives for the project (site scale), in terms of trend over time (watershed and subwatershed condition, and aquatic condition), and to data from other comparable streams to further ascertain trend and condition (watershed and subwatershed aquatic condition). Over the longer term (project completion and 10+ years) correlations between trends in watershed condition and aquatic condition will be made.

**Our adaptive management** approach is linked to the elements and stressors identified in the conceptual model for erosion and sediment dynamics. Our understanding is that by reducing and/or eliminating stressors in sensitive soils and landforms, the existing erosion regime will shift from one dominated by chronic accelerated erosion and sediment sources to a more natural erosional regime. As we initiate restoration activities that target chronic sources we anticipate an improvement in slope stability, soil cover, soil infiltration capability, soil productivity, runoff regimes, and downstream channel habitat conditions.

The proposed projects stem primarily from a watershed analysis, which identified key system processes producing conditions outside their historic range. Subsequent inventory and analysis has supported the analysis, in correlating areas with high levels of watershed disturbance to less than desirable channel conditions as indicated by high amounts of sediment, poor shading, reduced channel stability, and other attributes. These interactions are depicted well in the conceptual models.

The first model component, “Upslope” includes key processes such as large wood production and transport, sediment production and transport, and water storage and yield. All of these processes are influenced by both natural events (precipitation, mass wasting, etc.) and anthropogenic stressors (roading, forest management, etc.). Our analysis has shown that some sub-watersheds, due to disturbance, are producing sediment at far greater rates than that which existing historically. Importantly, sediment production related to mass wasting is largely unchanged from the historic condition. The result is a shift in the sediment regime to one where infrequent inputs of sediment from mass wasting are overlaid by significant increases in “annual” sediment from chronic sources. The proposed action is designed to strategically treat sources of sediment, such that at the sub-watershed scales, the sediment regimes (and flow regime) are much closer to their historic condition.

The second major components in the conceptual model are riparian areas and floodplains. As illustrated by the model, these areas are critical influences on channel condition. Not only do these areas serve as sources of wood and shade to stream systems, they moderate influences of the upslope processes by metering flow, and storing sediment and nutrients. In the present case, our inventories and analyses have shown that some near-stream areas are in very poor condition. This condition results in higher temperatures, revised runoff and nutrient regimes, and increased sediment input to channels. The plan is designed to improve the condition of damaged near stream areas so that the system functions closer to its historical condition.

Stream channel processes are depicted as the model’s third component. This element represents the greatest level of uncertainty, due to the highly dynamic nature of these systems and the biota they support. Our basic hypothesis is that the conceptual model represents the natural system. If this is true, then moving the upslope and riparian/floodplain functions and processes closer to their natural condition should result in channel processes that are also closer to their historic condition. Not clearly depicted in the model are the effects (and resultant uncertainty) associated with scale. We are certain that our actions will result in improved conditions at the site scale, where the upslope and riparian treatments will be implemented. We are fairly certain that these changes will be manifested in channels at the sub-watershed scale. Less certain are the effects at the watershed scale. As this anadromous habitat is provided primarily at this scale it warrants further discussion. There is little uncertainty that the actions will provide improved protection of the channel system and supported biota. This is critical. As the model depicts, channel condition (and supported biota) are a function of a complex interaction of natural and anthropogenic factors. A change in these factors (drought, flood, fire, climate change) will produce changes from the present system. The best insurance that the resources of critical concern (anadromous fish) are protected, is to provide a system that closely approximates the system in which the species evolved. We believe our proposed actions move the system closer to one that provides the resiliency found in the natural system. Further, (but with less confidence given the uncertainty of natural triggering events) we believe the actions will eventually result in improvement of the channel conditions at the watershed scale.

The last component of our adaptive management approach applies to the general concepts of quality control in the production of outputs. Briefly, implementation and effectiveness of actions are monitored. Results of these evaluations, in terms of successes and especially failures, are then documented and applied to the next collection of identified and prioritized restoration activities.

**a. Performance Measures Appropriate for Project Objectives:** At the project level (watershed and subwatershed) our performance measures are: (1) the number of sites successfully treated, (2) Improvement of watershed condition and resiliency within the seven treated subwatersheds, (3) Improvement in the channel conditions within the seven treated subwatersheds, and (4) Improvement in the overall channel condition of antelope Creek. In a larger context, the primary biological/ecological objectives of our stewardship project meet the ERP objective of ecosystem quality, and are designed to improve riparian and fisheries habitat, restore wetlands and natural stream morphology and promote and maintain important ecological processes and functions. Our proposal also addresses the Strategic Plan goals of recovery of at-risk native species, reversing downward population trends of listed and non-listed and listed native species, and protecting and/or restoring functional habitat types. Collectively the activities compliment planned and ongoing restoration activities and management in the watersheds (by the Forest Service, watershed conservancies, Resource Conservation Districts and private landowners) and contribute to CALFED's long-term mission to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. Tasks are designed to provide long term benefits to the spring and fall-run Chinook salmon and steelhead habitat by reducing accelerated sediment production, restoring riparian areas, and educating the public on watershed stewardship principles. These activities have the potential to improve habitat, but more importantly will provide additional insurance for protection of habitat quality from future disturbances (i.e. wildfire, flood, spills) by improving overall system health, condition, and resiliency. Monitoring conducted during and following implementation will help answer questions regarding design effectiveness for performance and maintenance, and adaptive management options

**b. Coordinated Monitoring Programs:** This monitoring supplements and is complimentary to the long term monitoring efforts already established in the Deer and Mill Creek watersheds. The State Department of Fish and Game provides leadership for adult fish counts, and the primary private timberland owner, Sierra Pacific Industries, collects temperature data. Invertebrate sampling follows the Forest Service, Region 5 Rapid-Bio Assessment protocols. Samples are processed at the USFS Aquatic Analysis Lab in Logan, Utah.

**c. Citizen Monitoring Program:** Through our extensive outreach program, we have successfully involved the public, fellow stakeholders, other Federal, State, and local government agencies, and Watershed Conservancies in the planning and implementation of restoration work. These parties will remain involved with our restoration program as we invite them to workshops and field trips where implementation and effectiveness monitoring protocols, results, and adaptive management opportunities are shared. This is a critical step in promoting the expansion of restoration work across all property boundaries.

**d. Monitoring Protocols:** Region Five Stream Condition Inventory protocol will be used for all inchannel monitoring. This inventory is a standardized approach developed by fisheries biologists, hydrologists, and statisticians in the USDA Pacific Southwest Region. The inventory incorporates widely recognized techniques based on scientific research. Additionally, the Forest Service conducts PACFISH effectiveness monitoring, which includes elements of the Stream Condition Inventory protocol that have been adapted to the watershed scale. Region 5 bioassessment protocol will be used for macroinvertebrate sampling.

**e. Informing Local Decision Making:** Both implementation and effectiveness monitoring information will be gathered for dozens of different restoration treatments. Uniform monitoring protocols will be used, assessments by specialists made, and information databases built. Data will be made readily available to local interests. More importantly, the Forest Service will conduct workshops and field trips where participants will not only get an explanation of the monitoring parameters and results but also learn how to identify sites, develop opportunities, assess the benefits and costs, and initiate actions shown to be successful.

**Table 5: Monitoring Parameters and Data Collection Approach for Assessment Plan:**

Question to be Evaluated/ Hypothesis	Monitoring Parameter (s) and Data Collection	Data Evaluation Approach	Comments/ Study Priority
Are restoration activities implemented as designed?	Parameters are not identical for all projects; rather they vary by project, focused on the key activities. Key implementation questions are identified and tracked for each project. Monitoring occurs during project implementation, frequency varies by complexity of action.	Simple summary statistics (number of sites, # implemented, etc).	Priorities are: correction of problems during implementation, and transfer of findings to planning of future projects (e.g. through changes in contract specifications).
Are restoration activities effective in meeting onsite objectives?	Parameters vary by project. Response to high runoff events is required for channel/crossing projts. Where appropriate USFS sampling protocols for BMP effectiveness are employed. Soil Quality monitoring with emphasis on erosion: rilling, deposition, gullies, etc. are standard attributes. Sites will be monitored before and after implement., then once every five years. Emphasis is on erosion, visual evidence of rilling, deposition, sloughing, etc. are standard criteria. Channel projts will be evaluated after large storms (duration will be long term)	Each project assessed individually. Annually, results from all projects will be summarized. Diversion potential and other sediment risk production activities will be assessed by comparing response in watersheds with treatments to those without treatments, following storm events	Priority is identification of site scale problems so results can be fed back into future designs and prescriptions

**Table 5: Monitoring Parameters and Data Collection Approach for Assessment Plan: Lassen NF Upper Watershed Stewardship (continued)**

Question to be Evaluated/ Hypothesis	Monitoring Parameter (s) and Data Collection	Data Evaluation Approach	Comments/ Study Priority
Reduction in accelerated surface erosion and improvement in near channel condition will result in improved aquatic conditions at the subwatershed (site of activity) scale?	Parameters vary by project, depending on project goals. Typically, in-channel monitoring will use USFS R5 Channel Inventory Protocols, and emphasize sediment in channel (particle counts, pool tail fines, residual pool depths), and riparian recovery (temperature, shade). Number of measurements varies by attribute; sites will be monitored before and after implementation, then once every five years after major runoff events.	Results from monitoring reach will be compared before and after (long term) projects. Typically, mean and ranges of attributes will be displayed, and compared. Results will also be compared local and regional reference conditions.	Post activity sites will be added to ongoing PACFISH monitoring sites.
Restoration activities result in improved watershed condition (at the subwatershed scale)	Parameters include: road density, #channel crossings per mile, # crossings with diversion potential nearstream road density, nearstream disturbance, Equivalent roaded acres (%), and estimated road sediment production from selected crossings. Attributes are calculated using GIS layers, except for road crossing related erosion, which is estimated in the field using updated USFS protocols	At five-year intervals, parameters are collected (crossing erosion is collected during effectiveness monitoring). Results are compared to baseline, and trends are assessed.	Extend current PACFISH monitoring.
Do restoration activities result in improved aquatic conditions in anadromous fish habitat?	Sites within anadromous habitat are monitored annually to assess trend in attributes, which include particle counts and fine estimates at pool tails, residual depth and pool sediment lens length, wood, embeddedness, shade, temperature, and macroinvertebrates. Spawning surveys are conducted annually in these reaches. Holding survey counts of adult Chinook are conducted annually for each creek. All these elements are long term, and will be continued into the foreseeable future	Habitat measures are typically expressed as means (and range). Data from tributaries, main stem and site monitoring described above are used to assess activity effects. Comparisons also made to regional and local reference sites to gauge year to year and other "natural" variability	
Will programs designed to assist other landowners identify problems, initiate plans, and implement actions result in broader restoration actions occurring?	The number of landowners who attend field trips and workshops or request videos and CD-rom packages. The number of landowners who identify problems and seek assistance to initiate restoration actions.	Restoration plans completed. Results after implementation are compared with pre-project results. Additional landowners who share results and extend outreach to others.	Priority would be to assist landowners both financially and technically move beyond the planning phase.

**6. Scientific Basis for Restoration Actions:** The proposed restoration actions are based on the findings and associated recommendations from a variety of science-based analyses, including a watershed analysis and roads analysis, as well as extensive field inventories including a road condition inventory, and engineering evaluations.

**a. Assessment of Watershed Conditions:** A watershed analysis of the Deer, Mill, and Antelope Creek Watersheds was completed in 2000. Our watershed analysis found the condition of two key watershed elements, surface erosion and near stream disturbance, were significantly different than their historical condition. We now estimate that erosion rates in the upper watershed are significantly higher than historic rates. The analysis further determined that roads were a primary source of the near stream disturbance, and also the primary source of accelerated surface erosion. Assessments determined that most (70%) of this accelerated erosion is produced by 5% of the road segments.

**b. Previous Assessments:** No assessments made prior to the Watershed Analysis were used to establish the project goals or the basic assumptions of the proposal.

**c. Description of Scientific Assumptions:** The assumption or hypothesis being tested is whether we can bring about a significant improvement to watershed condition and resiliency in the upper Antelope Creek watershed and provide additional protection to downstream beneficial uses by systematically identifying and then effectively restoring the highest sediment producing sites. Our Phase I work has significantly reduced many uncertainties. We have identified the locations and causes of our chronic sediment sources and implemented many effective demonstration restoration treatments. We are monitoring these treatments and are applying adaptive management principles to refine and improve our restoration practices. Although site-specific inventory data suggests reduction of sediment transport from treated sites, we are uncertain to what extent site-specific improvements will affect stream dynamics and ecological function at larger scales. It is likely that measurable improvement in the quantity and quality of available spawning habitat will take time (and triggering streamflow events) to be manifested. We also know that public support and complimentary restoration efforts by other landowners in the watershed is essential to improving ecological functions and habitats at a watershed level scale, and we will test this scientific assumption by stepping up our efforts to share technology and experiences and providing an avenue for other landowners become involved in the planning and implementation of restoration work.

**d. Consistency of Proposed Actions With Scientific Assumptions:** Through the Watershed Analysis, the Road Condition Inventories, the Engineering Evaluations, and a Roads Analysis Process we have identified the highest priority subwatersheds, and those sites contributing or having the potential to contribute high levels of surface erosion and near stream disturbance. The proposed actions which are designed to effectively restore the highest sediment producing sites in the six highest priority subwatersheds are consistent with our scientific assumptions.

**e. Baseline Knowledge Used to support the Management Actions:** The baseline knowledge has been gained from the analyses and field surveys previously mentioned. These site-specific analysis and surveys support generally accepted principles of watershed management and restoration (Williams, Wood, and Dombeck, 1997). Because the proposal is designed to bring key ecosystem elements (surface erosion, hillside hydrology, near channel condition) closer to their natural condition by restoring all of the highest sediment producing sites within the most sensitive subwatersheds, effectiveness monitoring results may reveal statistically significant changes in health and condition of these fully treated subwatersheds.

## **7a. Addressing CALFED Objectives:**

The primary biological/ecological objectives of our Phase II stewardship project meet the ERP objectives of ecosystem quality and water quality, as they are designed to improve riparian and fisheries habitat, restore wetlands and natural stream morphology, promote and maintain important ecological processes and functions and maintain water quality. The proposal also addresses three ERP Goal statements: Goal 1; The recovery of at-risk species and stabilizing the populations of other native species, Goal 2; The rehabilitation and maintenance of ecosystem functions, and Goal 4; The protection or restoration of functional habitat types for public values. Restoration work is targeted to benefit at-risk species of Chinook salmon and Steelhead trout as well as populations of other declining native species. The project links to our Land and Resource Management Plan (LRMP) as amended by PACFISH, the Clean Water Action Plan, and SWRCB Beneficial Uses. Collectively the activities contribute to CALFED's long-term mission to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. Tasks are designed to provide long term benefits to the spring and fall-run Chinook salmon and steelhead habitat by reducing accelerated sediment production and restoring riparian areas

on Federal lands, and assisting others who are already implementing restoration work, and those who have yet to become partners, to identify problems, develop restoration opportunities, and successfully implement effective treatments.

The Antelope Creek watershed restoration projects specifically help meet Target 1 under Upper Watershed Processes found on page 239 of the ERP. The implementation objective is to restore ecological processes in the upper watershed to maintain and improve the quantity and quality of water flowing into the tributaries and rivers of the Sacramento-San Joaquin Delta and San Francisco Bay. Target 1 Programmatic actions addressed by this proposal include improving forestry management practices including road building and maintenance.

Our proposal also contains elements that address the primary objectives of the Watershed Program. The two tasks promote coordination and assistance among government agencies, private landowners and local watershed groups, include standardized monitoring protocols that can be integrated into other databases, support education and outreach, and include a long-term commitment to restoration, maintenance, and monitoring programs.

Lastly, our proposal directly promotes two of Calfed's initial implementation priorities. Task 1 implements a variety of site-specific watershed conservation and restoration actions. The planned restoration actions are designed to: contribute to increased watershed resiliency, reduce accelerated levels of erosion from roads, require low maintenance, and allow for adaptive management.

Task 2 is designed to expand the community's knowledge and understanding of our ongoing restoration efforts, including adaptive management, that support Calfed's mission. We believe that many of our current community partners and potential partners want to expand their watershed restoration involvement, but do not know how to begin to identify problems, develop plans, and initiate restoration treatments. Our goal is to help build local community capacity to assess, and then effectively manage the watersheds that affect the Bay-Delta system.

Both tasks are designed to meet Calfed's Watershed Program objectives and priorities as well as the Forest's long-term commitment to watershed restoration and management. The Forest is committed to taking all the necessary steps to ensure that the upper anadromous watersheds continue to provide the best available habitat for its aquatic and biotic inhabitants. With a watershed restoration and management strategy more accurately defined than ever before, a demonstrated commitment to implement projects, and the continued support of stakeholder groups and local, state and federal agencies, the Forest is in a position to accelerate its own watershed stewardship programs and assist others.

## **7b. Defining Relationships Between Watershed Processes, Management, and CALFED's Primary Goals:**

Our proposal provides a great opportunity to illustrate the relationship between watershed processes and watershed management, and the CALFED objectives of ecosystem quality and water quality, and to a lesser extent, water quantity. The linkages between watersheds and aquatic systems and resources of concern is depicted in our conceptual model, and documented in the watershed analysis for Antelope Creek. Our basic assumption is that treatment of upslope and nearstream sites producing accelerated rates of erosion in watersheds translates to improved habitat conditions in channels that support anadromous fish. A further assumption is that treatment of high risk sites will result in watersheds that are more resilient to changes from natural disturbance regimes (flooding, fire, etc.), thereby providing for improved conditions for the aquatic species supported by the watershed in the long-term. Our proposal focuses on implementation of treatment of these sites of erosion and high risk, but also includes strong monitoring and technology transfer components that will be used to demonstrate both the effectiveness of the treatment measures, and the connection between the treatments and watershed and aquatic habitat conditions. This will be accomplished by monitoring changes at the site of implementation, in the channels draining the sub-watersheds in which treatments will be implemented, and in reaches reflecting condition in aquatic habitat at the greater Antelope Creek scale. Results of this monitoring will be shared not only in report form, but also through on site field trips for the public, agency representatives, schools, colleges and professional organizations.

## **7C. Environmental Compliance:**

The Forest Service will prepare all of the required environmental documentation necessary to comply with NEPA requirements. Much of the planning and documentation for this implementation proposal has been completed with our Phase I grant.



**Strategy and Timetable:** For Task 1 implementation projects a NEPA document with supporting specialist reports, including a wildlife biological assessment, is necessary before project implementation. Consultation will also be required with the National Marine Fisheries Service. Our 1997 Calfed grant enabled us to complete the majority of other necessary supporting NEPA documents including a Roads Analysis, a Heritage Resource Inventory, and a Botanical Assessment. Our strategy is to complete conduct public scoping, complete all necessary environmental documents, and consultation in the first year of the grant allowing us two full field seasons to implement the restoration work.

For Task 2, No environmental documents or approvals are required.

## **8. Additional Important Aspects of the Proposal:**

The Forest has developed strong working relationships with the Battle, Butte, Deer, and Mill Creek Watershed Conservancies, and the two principle landowners, Collins Pine and Sierra Pacific. Members of these groups as well as the State Department of Fish and Game, Department of Water Resources, the US Fish and Wildlife Service, private consultants, and interested publics have contributed to the development of this proposal as well as our approved 1997 and 2001 Calfed grant proposals. We have shared Calfed's Watershed Program Plan and our watershed restoration plans with an extensive list of interested publics, including several tribal governments. All those who have responded to our restoration plans, support our efforts to improve the quality of watersheds tributary to the upper Bay-Delta system.

Most importantly, the community has been asked to participate in the planning of restoration work, including the selection of restoration sites and the treatments to implement. This proposal continues to build on the foundation of our 1997 and 2001 Calfed grant by reaching out to the community for help and support, and increasing their understanding of the Watershed Program Plan. This proposal provides local property owners with additional demonstration restoration projects plus an opportunity to learn how to identify restoration sites, develop restoration opportunities, assess the benefits and costs, and initiate implementation. Acceptance and understanding through education and interpretation is key to the timely implementation of the Calfed program.

Our proposal will expand the local community's understanding of two of Calfed's program objectives, ecosystem and water quality through education and more importantly demonstration projects. Some leaders within the local communities have been critical of Calfed's Watershed Program Plan, in particular the issues surrounding the water supply objective. Because of water supply issues some of our community leaders may not be fully recognizing the potential benefits of the whole program. Our proposal will demonstrate the positive effects that the Calfed program can have on restoring and maintaining quality habitat and clean water, items valued as much as water supply by the community. When the community sees that Calfed's objectives and funding go beyond the Valley floor, the fledgling partnership that currently exists between the upper watershed community and Calfed should grow. Calfed's past and present support of numerous upper watershed projects can only help build stronger partnerships. Additionally, the proposed restoration treatments address both internal resource concerns and public access issues, in particular the closure and/or decommissioning of some roads. Although vehicular access on some existing roads within the Antelope Creek watershed, an extensive transportation network will remain, allowing for the full range of currently permitted recreational and commercial activities.

## **Compliance with Standard Terms and Conditions:**

The United States Forest Service will comply with all applicable State and Federal terms listed in Section 8, Terms and Conditions, within the Proposal Solicitation Package.

## **Threshold Requirements:**

The Letters of Notification, Environmental Compliance Checklist, and Land Use Checklist are in Appendices A and C.

No Federal contract forms are required to be submitted with this proposal. Forms 4099n (Additional Standard Clauses) and 4247 (Contracts with the United States) will be submitted as required before or at the time of final contract award.

## **2002 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION**

### Appendix A

#### Letters of Notification

## **2002 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION**

### Appendix B

#### Vicinity Map

## **2002 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION**

### Appendix C

#### Environmental Compliance Checklist

#### Land Use Checklist

## **2002 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION**

### Appendix D

#### Letters of Support

## **2001 CALFED ECOSYSTEM RESTORATION PROPOSAL SOLICITATION**

### Appendix E

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**B. Executive Summary**    **Project Title:** Lassen National Forest Watershed Stewardship Within the Anadromous Watersheds of Butte, Deer, and Mill Creeks.

**Amount Requested:** \$849,845 over three years.

**Applicant:**    Lassen National Forest    Primary Contact: Jeff Withroe, Ecosystem Manager  
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**Participants and Collaborators:** Lassen National Forest, Pacific Southwest Region, US Forest Service, Deer, Mill, and Butte Creek Watershed Conservancies, Collins Pine Company, Chester High School, Chester Elementary School, National Marine Fisheries Service, CALTRANS. (See Appendix A for List of Supporters)

In 1997, the Lassen National Forest (LNF) received a Phase I CALFED grant to plan extensive restoration work, and implement and monitor several demonstration projects within the Deer, Mill, and Antelope Creek watersheds. These watersheds support most of the few remaining naturally reproducing stocks of anadromous fish in the Sacramento Valley. Our watershed analysis found the condition of two key watershed elements (surface erosion and near stream disturbance) were significantly different than their historical condition. We now estimate that erosion rates in the upper watershed are sixty percent higher than historic rates. The analysis further determined that roads were a primary source of the near stream disturbance, and also the primary source of accelerated surface erosion. The grant was used to identify biologically and physically sensitive areas where we could greatly reduce sediment delivery through appropriate treatment. We have determined that most (70%) of this accelerated erosion is produced by 5% of the road segments. The hypothesis being tested is whether we can bring about a significant improvement to watershed condition and resiliency in the upper watershed and provide additional protection to downstream beneficial uses by systematically identifying and then effectively restoring the highest sediment producing sites. Our Phase I work has significantly reduced many uncertainties. We have identified the locations and causes of our chronic sediment sources and implemented many effective restoration treatments. We are monitoring these treatments and are applying adaptive management principles to refine and improve our restoration practices. Although site-specific inventory data suggests reduction of sediment transport from treated sites, we are uncertain to what extent site-specific improvements will affect stream dynamics and ecological function at larger scales. It is likely that measurable improvement in the quantity and quality of available spawning habitat will take time (and triggering streamflow events) to be manifested. We also know that public support is essential to our restoration work and we will test the hypothesis that interpretive displays and educational programs will increase public understanding and subsequently build greater public support.

The primary biological/ecological objectives of our stewardship project meet the ERP objective of ecosystem quality, and are designed to improve riparian and fisheries habitat, restore wetlands and natural stream morphology and promote and maintain important ecological processes and functions. Our proposal also addresses the Strategic Plan goals of recovery of at-risk native species, reversing downward population trends of listed and non-listed and listed native species, and protecting and/or restoring functional habitat types. The project links to our Land and Resource Management Plan (LRMP) as amended by PACFISH, the Clean Water Action Plan, and SWRCB Beneficial Uses. Collectively the activities compliment planned and ongoing restoration activities and management in the watersheds (by the Forest Service, watershed conservancies, Resource Conservation Districts and

private landowners) and contribute to CALFED's long-term mission to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. Tasks are designed to provide long term benefits to the spring and fall-run chinook salmon and steelhead habitat by reducing accelerated sediment production, restoring riparian areas, and educating the public on watershed stewardship principles. These activities have the potential to improve habitat, but more importantly will provide additional insurance for protection of habitat quality from future disturbances (i.e. wildfire, flood, spills) by improving overall system health, condition, and resiliency. Monitoring conducted during and following implementation will help answer questions regarding design effectiveness for performance and maintenance, and adaptive management options

The LNF has worked with stakeholders to develop consistent inventory techniques, complimentary implementation of restoration strategies, uniform monitoring protocols, coordinated maintenance planning, and adaptive management strategies. CALFED funds, like other grants, allow us to accelerate our watershed restoration efforts, continue current and forge new partnerships with fellow stakeholders, expand school educational opportunities, and also improve the Forest's competitive position for additional internal funding.



**Table 2: CALFED WATERSHED PROGRAM BUDGET AND PROJECT SUMMARY**

<b>Task Description</b>	<b>Completion Date*</b>	<b>Cost Share Funds</b>	<b>CALFED Funds</b>	<b>Total</b>
<b>Task 1</b>				
1a. Restoration Treatments	September 2005	\$125,000	\$484,000	\$614,000
1b. Environmental Compliance Administration, Reporting and Presentations	September 2003 September 2005 September 2005	\$15,000	\$79,920	\$89,920
1c. Engineering Design	April 2003	\$10,000	\$53,280	\$63,280
Contract Preparation Administration	September 2003 September 2005			
Task 1 Totals		\$150,000	\$617,200	\$767,200

**Task Products:** Completion of all necessary environmental documents and implementation of restoration treatments at over 60 identified sites. Treatments result in the restoration of wetlands and natural stream morphology. Treatments are scientifically based, designed to reduce, at the subwatershed scale, accelerated surface erosion and near-stream disturbance. The treatments are also designed to significantly reduce maintenance costs. Immediately following treatments, risk of failure during large precipitation events is substantially reduced, and resiliency to catastrophic events is improved.

**Success Criteria:** Success at the individual site will be measured on whether the treatments were implemented as designed, and have the chronic sources of surface erosion and near-stream disturbance be substantially reduced. Success at the subwatershed scale will measure the cumulative effects of bundled treatments improving watershed condition and aquatic conditions in anadromous habitat.

**Table 3: CALFED WATERSHED PROGRAM BUDGET AND PROJECT SUMMARY**

<b>Task Description</b>	<b>Completion Date*</b>	<b>Cost Share Funds</b>	<b>CALFED Funds</b>	<b>Total</b>
<b>Task 2</b>				
2a. Data Compiling	January 2005	0	\$23,000	\$23,000
Technology Transfer	September 2005	0	\$20,000	\$20,000
2b. Workshops, Field Trips, Administration, Reporting and Presentations	September 2005	0	\$13,000	\$13,000
Task 2 Totals		0	\$56,000	\$56,000
Project Totals:		\$150,000	\$673,200	\$823,200

**Task Products:** Compiling of all watershed restoration databases and results in CD-rom format; the creation of an efficient standardized technology transfer program; the production of a watershed restoration video; and the completion of workshops and field trips.

**Success Criteria:** Success will be measured by the number of workshop and field trip participants, the number of individuals who are interested in receiving watershed restoration information, the number of entities interested in developing partnerships, and lastly, the number of new partners who identify restoration opportunities, develop plans, and implement management actions.

\* Completion Dates are based on a three-year grant with an estimated start date of September 2002.

Table 4. Lassen National Forest Watershed Stewardship Within the Anadromous Antelope Creek Watershed - Three Year Budget Estimate

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Table 4. Lassen National Forest Watershed Stewardship Within the Anadromous Antelope Creek Watershed - Three Year Budget Estimate

				Subject to Overhead			Overhead Exempt		
Year	Task	Labor Rate*	Direct Labor Hours	Salary and Benefits	Supplies & Equipment	Overhead (show % here)	Service Contracts	Total cost	Cost Share
<b>3</b>	Task 1								
	Treatments	24%	2160	\$70,000	\$60,000	\$26,000	\$159,000	\$315,000	\$70,000
	Environmental Compliance and Administration	24%		\$17,935		\$4,485		\$22,420	
	Engineering Design, Contract Preparation and Administration	24%		\$12,800		\$3,200		\$16,000	\$2,500
	Task 2	24%							
	Data Compilation, Technology Transfer	24%	200	\$5,640	\$3,000	\$2,160	\$20,000	\$30,800	
	Workshops, Field Trips, and Administration	24%	170	\$4,260	\$1,500	\$1,440		\$7,200	
<b>Cost Year 3</b>								\$391,420	\$72,500
<b>Total Project Cost</b>								\$673,200	\$150,000

\* Benefits/salary percentage represents the average of those specialists expected to support the projects.  
Note 1: Administration costs for Task 1 are included under Environmental Compliance and Project Management as well as Engineering Design, Contract Preparation, and Contract Administration. Administration costs for Task 2 are included under Workshops, Field Trips, and Administration.  
Note 2: Reporting and Presentation costs for both tasks are included as part of Administration.